AMENDMENTS TO THE CLAIMS

This Listing of the Claims will replace all prior versions, and listings, of claims in this application.

Listing of the Claims:

1. (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

    a first memory,

    a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing the R-matrix to contiguous locations within the first memory,

    a second processing element coupled with the first memory,

    the second processing element accessing the R-matrix from said contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

    a second memory coupled with the set of first processing elements and a third processing element,

    the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

    the third processing element placing the gamma-matrix in the second memory,

    wherein the gamma-matrix is a composition of a complex conjugate of the code associated with one user and a complex conjugate of the codes associated with one or more other users.

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2.   (Canceled)

3.   (Currently Amended) The device of claim 1, <u>wherein said one or more first processing</u>
        <u>elements access said gamma-matrix from said second memory to generate the R-matrix.</u>
        ~~comprising~~

        ~~a second memory coupled with the set of first processing elements and a third processing~~
        ~~element,~~

        ~~the third processing element generating a matrix (hereinafter "gamma-matrix")~~
        ~~representative of a correlation between a code associated with one user and those associated~~
        ~~with one or more other users,~~

        ~~the third processing element places the gamma-matrix in the second memory.~~

4.   (Currently Amended) The device of claim 1~~3~~, comprising

        the third processing element generating the gamma-matrix and placing that matrix in
        contiguous locations within the second memory,

        the set of first processing elements accessing the gamma-matrix from contiguous
        locations within the second memory and generating the R-matrix.

5.   (Currently Amended) The device of claim 1~~3~~, comprising

        a multi-port switch coupled to the third processing element and to the second memory,

        wherein the third processing element places the gamma-matrix in the second memory via
        the multi-port switch.

6.   (Canceled).

7.   (Currently Amended) The device of claim ~~1~~3, wherein the third processing element

updates the gamma-matrix as users are added or removed from the spread spectrum

system.

8.   (Currently Amended) <u>A communications device for detecting user transmitted symbols</u>

<u>encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising</u>

<u>a first memory,</u>

<u>a set of one or more first processing elements, coupled to the first memory, the set of first</u>

<u>processing elements generating a matrix (hereinafter "R-matrix") representative of cross</u>

<u>correlations among user waveforms and storing the R-matrix to contiguous locations</u>

<u>within the first memory,</u>

<u>a second processing element coupled with the first memory,</u>

<u>the second processing element accessing the R-matrix from said contiguous locations</u>

<u>within the first memory and generating symbol estimates as a composition of the R-</u>

<u>matrix,</u>

<u>a second memory coupled with the set of first processing elements and a third processing</u>

<u>element,</u>

<u>the third processing element generating a matrix (hereinafter "gamma-matrix")</u>

<u>representative of a correlation between a code associated with one user and those</u>

<u>associated with one or more other users,</u>

<u>the third processing element placing the gamma-matrix in the second memory</u>

~~The device of claim 3,~~ wherein the set of first processing elements generate the R-matrix

as a composition of the gamma-matrix.

9.   (Previously Presented) A communications device for detecting user transmitted symbols

encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a host controller coupled to each of the set of first processing elements, wherein the host controller generates a partitioning of the R-matrix, that partitioning divides the R-matrix into one or more portions based on a number of users and a number of available processing elements,

the host controller assigns to each first processing element a portion of the R-matrix to generate according to the partitioning,

each of the first processing elements generating the assigned portion of the R-matrix according to the partitioning,

the host controller re-calculates the partitioning of the R-matrix when a user is added or removed from the spread spectrum system, and assigns a new portion of the R-matrix to each first processing element according to that new partitioning.

10.   (Original) The device of claim 9, wherein each first processing element places its respective portion of the R-matrix in the first memory according to its respective partition such that each portion of the R-matrix is contiguous with respect to the other portions.

11.   (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to a direct memory access engine (hereinafter "DMA engine"), the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms, the DMA engine coupled with the first memory,

the DMA engine storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a host controller coupled to each of the set of first processing elements, the host controller generating a partitioning of the R-matrix, that partitioning divides the R-matrix into one or more portions based on a number of users and a number of available processing elements,

the host controller assigning to each first processing element a portion of the R-matrix to generate according to the partitioning,

each first processing element generating the assigned portion of the R-matrix according to the partitioning,

the host re-calculating the partitioning of the R-matrix when a user is added or removed from the spread spectrum system, and assigning a new portion of the R-matrix to each first processing element according to that new partitioning.

12.   (Canceled).

13.   (Original) The device of claim 11 comprising

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a second memory coupled with the set of first processing elements and a third processing

element,

the third processing element generating a matrix (hereinafter "gamma-matrix")

representative of a correlation between a code associated with one user and those

associated with one or more other users,

the third processing element places the gamma-matrix in the second memory.

14.   (Previously Presented) The device of claim 13, wherein

the third processing element generates the gamma-matrix and places that matrix in

contiguous locations within the second memory, and

the set of first processing elements accesses the gamma-matrix from contiguous locations

within the second memory and generates the R-matrix.

15.   (Previously Presented) The device of claim 13, comprising

a multi-port switch coupled to the third processing element and to the second memory,

wherein the third processing element places the gamma-matrix in the second memory via

the data switch.

16.   (Currently Amended) A communications device for detecting user transmitted symbols

encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to a direct memory access engine

(hereinafter "DMA engine"), the set of first processing elements generating a matrix

(hereinafter "R-matrix") representative of cross correlations among user waveforms, the

DMA engine coupled with the first memory,

the DMA engine storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element placing the gamma-matrix in the second memory

The device of claim 13, wherein the gamma-matrix is a composition of a complex conjugate of the code associated with one user and a complex conjugate of the codes associated with one or more other users.

17.   (Original) The device of claim 13, wherein the third processing element updates the gamma-matrix as users are added or removed from the spread spectrum system.

18.   (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to a direct memory access engine (hereinafter "DMA engine"), the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms, the DMA engine coupled with the first memory,

the DMA engine storing the R-matrix to contiguous locations within the first memory,

a second processing element coupled with the first memory,

the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing element,

the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,

the third processing element placing the gamma-matrix in the second memory

~~The device of claim 13,~~ wherein the set of first processing elements generate the R-matrix as a composition of the gamma-matrix.

19.   (Canceled).

20.   (Currently Amended) The device of claim ~~19~~11, wherein DMA engine places each portion of the R-matrix in the first memory according to the partitioning such that the each portion of the R-matrix is contiguous with respect to the adjacent portions.

21.   (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first memory,

a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing that R-matrix to contiguous locations within the first memory,

a second processing element coupled to the first memory, the second processing element accessing R-matrix from said contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,

a second memory coupled with the set of first processing elements and a third processing

element,

the third processing element generating a matrix (hereinafter "gamma-matrix")

representative of a correlation between a code associated with one user and those

associated with one or more other users,

wherein the third processing element places the gamma-matrix in the second memory,

wherein the third processing element updates the gamma-matrix as users are added or

removed from the spread spectrum system.

22.   (Canceled).

23.   (Previously Presented) The device of claim 21, wherein

the third processing element places the gamma-matrix in contiguous locations within the

second memory,

the set of first processing elements accessing the gamma-matrix from contiguous

locations within the second memory and generating the R-matrix.

24.   (Previously Presented) The device of claim 21, comprising

a multi-port switch coupled to the third processing element and to the second memory,

the third processing element places the gamma-matrix in the second memory via the

switch.

25.   (Currently Amended) The device of claim 27~~21~~, wherein the gamma-matrix is a

composition of a complex conjugate of the code associated with one user and a complex

conjugate of the codes associated with one or more other users.

26.   (Canceled).

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27.   (Currently Amended) <u>A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising</u>

<u>a first memory,</u>

<u>a set of one or more first processing elements, coupled to the first memory, the set of first processing elements generating a matrix (hereinafter "R-matrix") representative of cross correlations among user waveforms and storing that R-matrix to contiguous locations within the first memory,</u>

<u>a second processing element coupled to the first memory, the second processing element accessing R-matrix from said contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix,</u>

<u>a second memory coupled with the set of first processing elements and a third processing element,</u>

<u>the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users,</u>

<u>said third processing element placing the gamma-matrix in the second memory,</u>

~~The device of claim 21,~~ wherein the set of first processing elements generate the R-matrix as a composition of the gamma-matrix.

28.   (Original) The device of claim 21, comprising

a direct memory access engine (hereinafter "DMA engine") coupled with the set of second processing elements and the first memory,

the DMA engine placing the R-matrix in contiguous locations within the first memory.

29.   (Original) The device of claim 21, comprising

a direct memory access engine (hereinafter "DMA engine") coupled with the third

processing element and the second memory,

the DMA engine placing the gamma-matrix in contiguous locations within the second-

memory.